

AC LINE CONDUCTED EMISSIONS TEST REPORT FOR A LOW POWER TRANSMITTER

I. GENERAL INFORMATION

Requirement: FCC
Test Requirements: FCC Part 15

Applicant: Silver Spring Networks
575 Broadway Street
Redwood City, CA 94063

FCC ID: OWS-NIC42
IC: 5975A-NIC42
Model No.: NIC42

II. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

The Silver Spring Networks (SSN) model NIC42 is an access point for electric power meter communications use. The radio incorporates a dual band 900 MHz/ 2.4 GHz frequency hopping mesh network radio. Test data for 900 MHz FHSS operation are provided in a separate report.

III. TEST DATES AND TEST LOCATION

Testing was performed on 10 May 2013 at

BACL Laboratories
1274 Anvilwood Ave.
Sunnyvale, CA 94089



T.N. Cokenias
EMC Consultant/Agent for Silver Spring Networks

16 May 2013

TEST PROCEDURES

All tests were performed in accordance with the applicable procedures called out in the following documents, unless otherwise noted:

FCC 47CFR15

DA 00-705: Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems

RSS-Gen Issue 3: General Requirements and Information for the Certification of Radio Apparatus

RSS-210 Issue 8: Low power license exempt radio frequency devices (December 2010)
RSS-212: Test Facilities and Test Methods for Radio Equipment

ANSI C63.4 – 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

Laboratory Accreditation Information

BACL

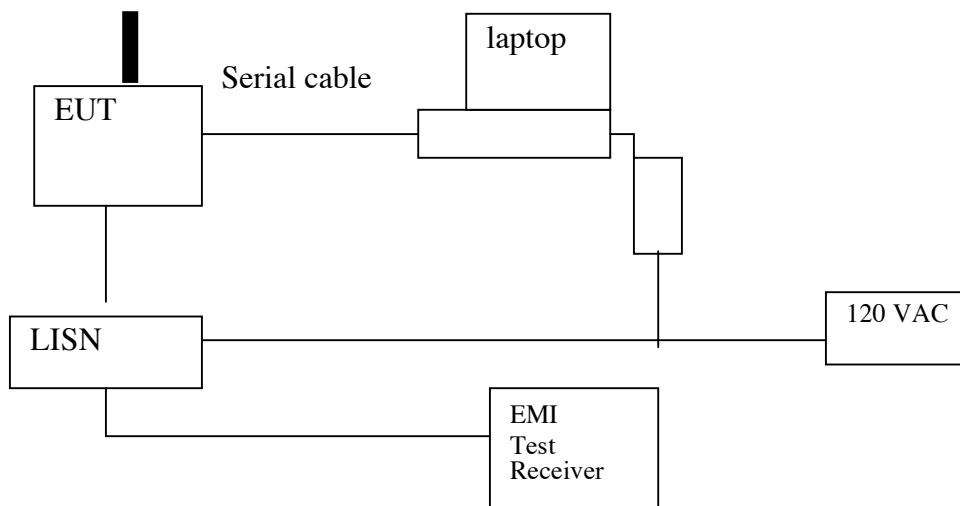
2.948 FCC Registration Number: 90464

Industry Canada Test Site Registration Number: 3062A

Accrediting Body: A2LA

Test Equipment List

Manufacturer	Description	Model No.	Serial No.	Calibration Due
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2014-04-23
Solar Electronics	LISN	9252-R-24-BNC	511205	2013-06-25



Support Equipment

Equipment	Mfr	Model	Asset No.
Laptop PC	Dell	PP01L	TW-0791UH1280-OC9-6558
AC/DC adapter	CUI Inc.	DSA-60W-20	2607HB

4.4 POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

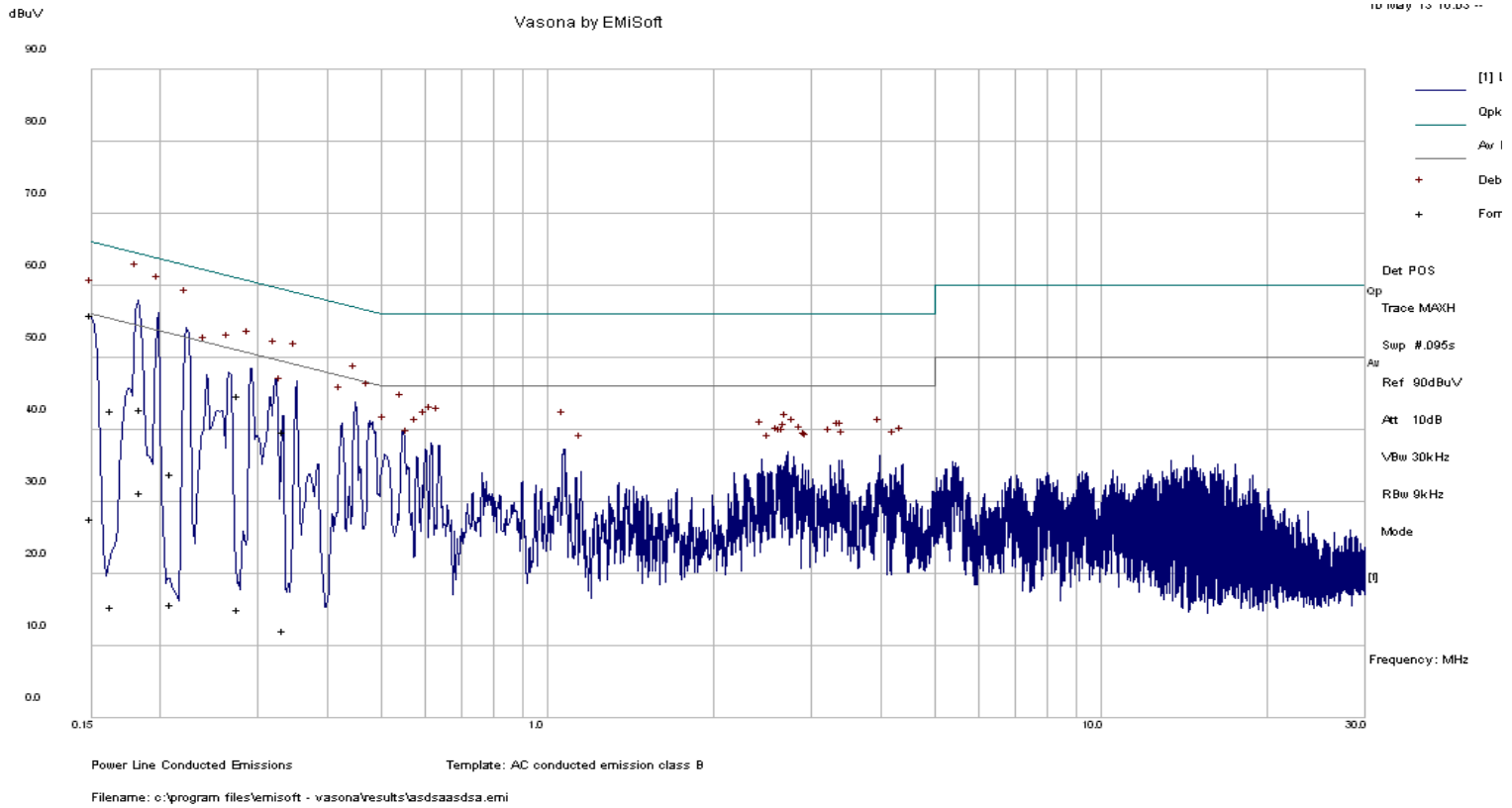
The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

The transmitter was configured to simultaneously transmit FHSS mode in the 902 MHz and 2.4 GHz bands simultaneously, since this is the worst-case operation (maximum output power) for simultaneous operation.

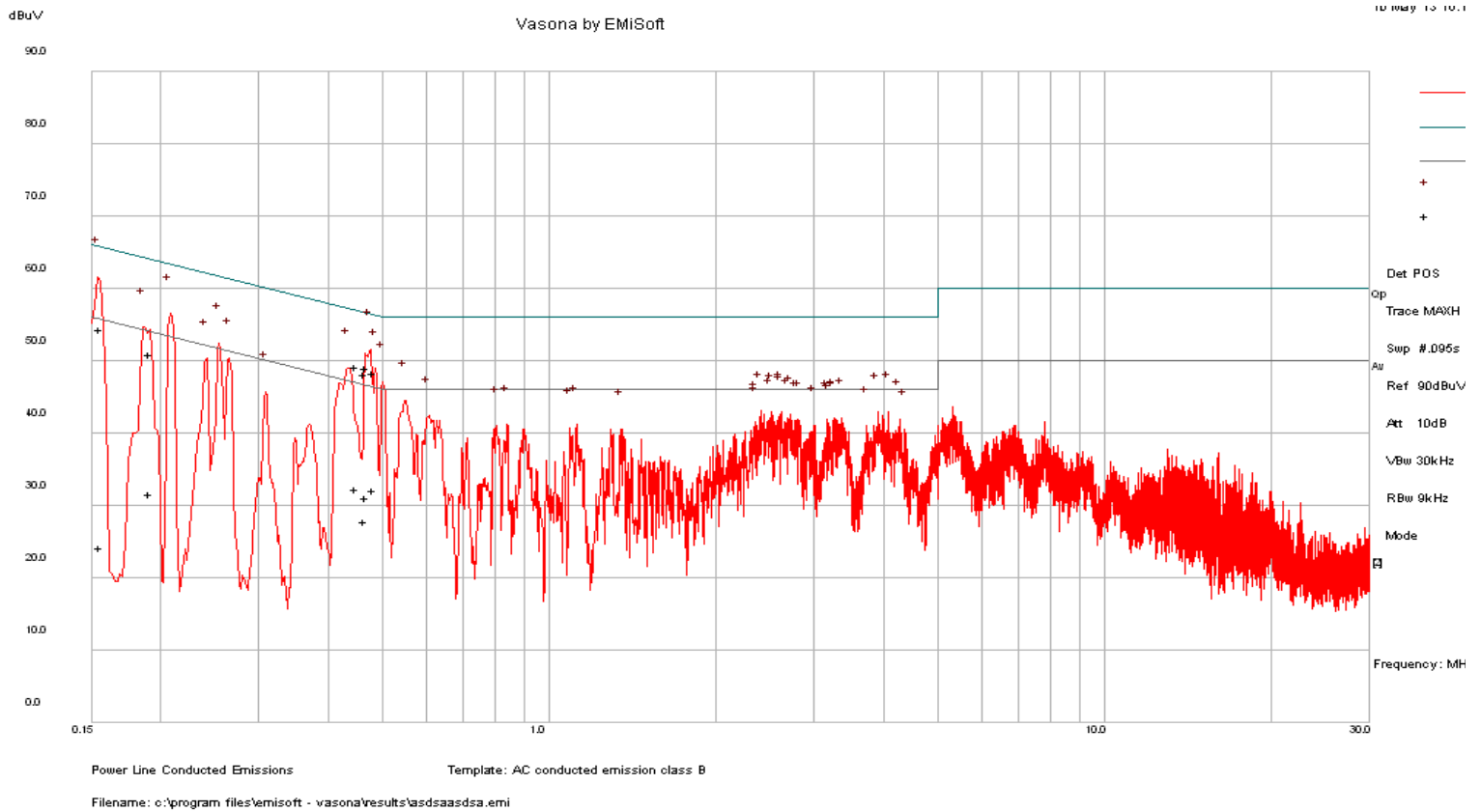
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:



Neutral AC Line Conducted Emissions



Tabulated worst case AC line conducted data

Vasona Data : Formally Assessed Peaks

No	Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement	Line	Limit dBuV	Margin dB	Pass /Fail
1	0.163804	31.44	10.09	1.09	42.62	Quasi Peak	Live	65.27	-22.64	Pass
2	0.184949	31.96	9.82	1.05	42.82	Quasi Peak	Live	64.26	-21.44	Pass
3	0.210371	23.21	9.76	1	33.97	Quasi Peak	Live	63.19	-29.22	Pass
4	0.150244	42.94	11.95	1.12	56.01	Quasi Peak	Live	65.99	-9.97	Pass
5	0.277799	34.11	9.68	0.88	44.67	Quasi Peak	Live	60.88	-16.21	Pass
6	0.333564	29.71	9.67	0.39	39.77	Quasi Peak	Live	59.36	-19.6	Pass
7	0.163804	4.26	10.09	1.09	15.44	Average	Live	55.27	-39.83	Pass
8	0.184949	20.41	9.82	1.05	31.28	Average	Live	54.26	-22.98	Pass
9	0.210371	5.04	9.76	1	15.79	Average	Live	53.19	-37.4	Pass
10	0.150244	14.57	11.95	1.12	27.64	Average	Live	55.99	-28.35	Pass
11	0.277799	4.5	9.68	0.88	15.07	Average	Live	50.88	-35.81	Pass
12	0.333564	2.07	9.67	0.39	12.12	Average	Live	49.36	-37.24	Pass

Vasona Data : Formally Assessed Peaks

No	Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement	Line	Limit dBuV	Margin dB	Pass /Fail
1	0.155837	42.31	10.92	1.11	54.34	Quasi Peak	Neutral	65.68	-11.35	Pass
2	0.465393	38.32	9.69	0.22	48.22	Quasi Peak	Neutral	56.6	-8.37	Pass
3	0.191433	40.19	9.8	1.04	51.02	Quasi Peak	Neutral	63.97	-12.95	Pass
4	0.469572	39.08	9.69	0.22	48.99	Quasi Peak	Neutral	56.52	-7.53	Pass
5	0.450314	39.26	9.69	0.22	49.17	Quasi Peak	Neutral	56.87	-7.7	Pass
6	0.483632	38.49	9.69	0.21	48.39	Quasi Peak	Neutral	56.28	-7.88	Pass
7	0.155837	12.12	10.92	1.11	24.15	Average	Neutral	55.68	-31.54	Pass
8	0.465393	17.98	9.69	0.22	27.88	Average	Neutral	46.6	-18.71	Pass
9	0.191433	20.87	9.8	1.04	31.7	Average	Neutral	53.97	-22.27	Pass
10	0.469572	21.23	9.69	0.22	31.14	Average	Neutral	46.52	-15.38	Pass
11	0.450314	22.45	9.69	0.22	32.36	Average	Neutral	46.87	-14.51	Pass
12	0.483632	22.23	9.69	0.21	32.14	Average	Neutral	46.28	-14.14	Pass

END OF REPORT

Report Revision History

Revision No.	Revision Description	Pages Revised	Revised by	Date
-	Original issue		T. Cokenias	16 May 2013